No. 787,335. PATENTED APR. 11, 1905.

W. D. LAMBERT.

STRAP FASTENER.

APPLICATION FILED MAY 5, 1904.

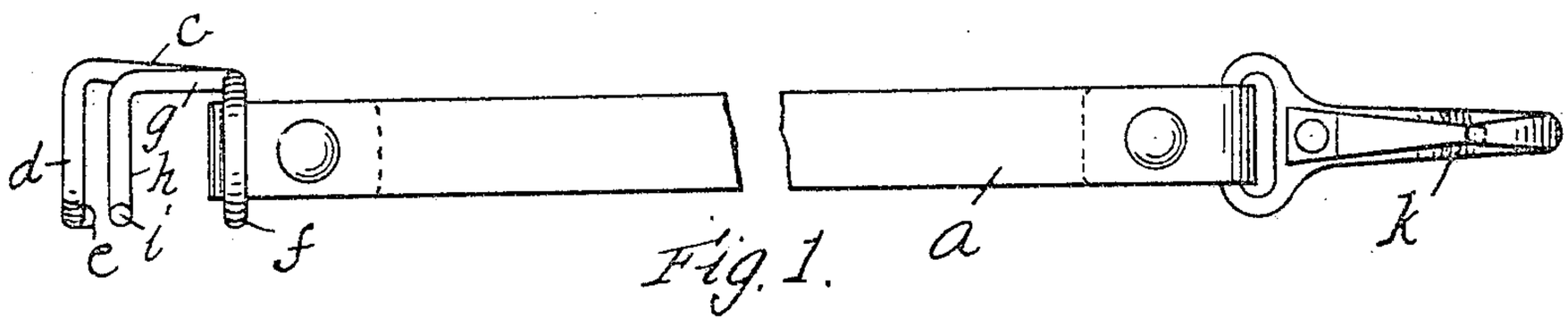

Fig. 1.

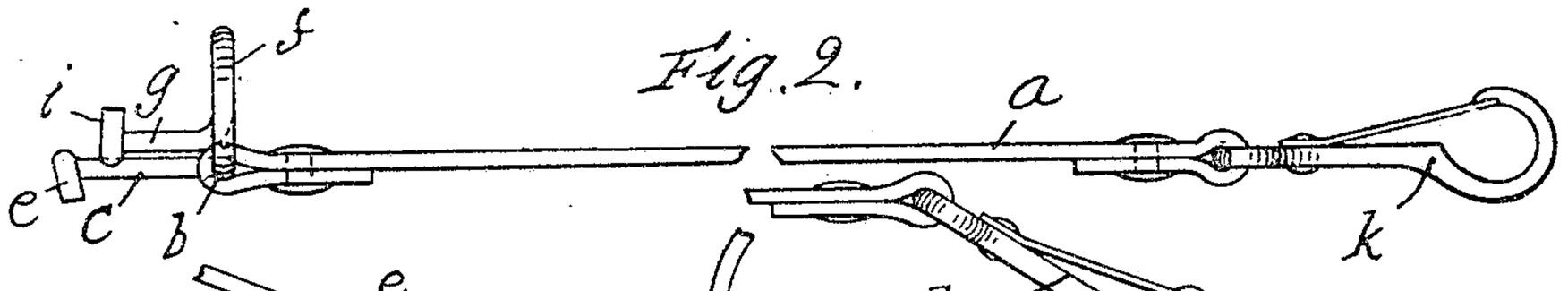

Fig. 2.

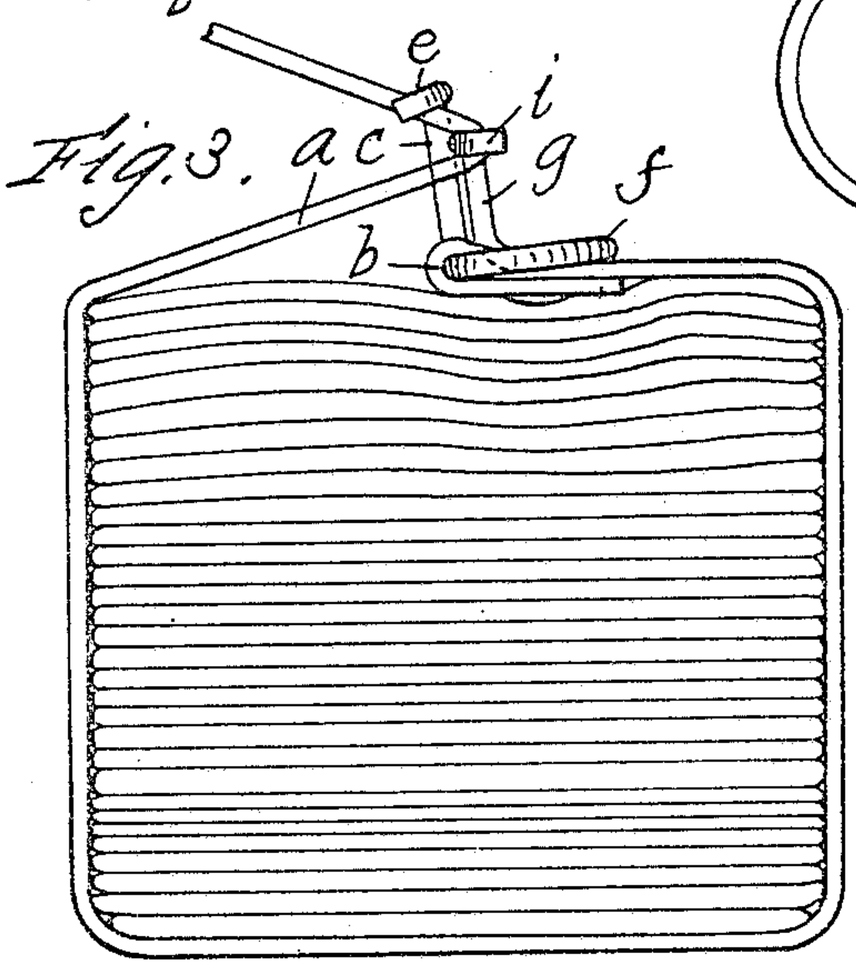

Fig. 3.

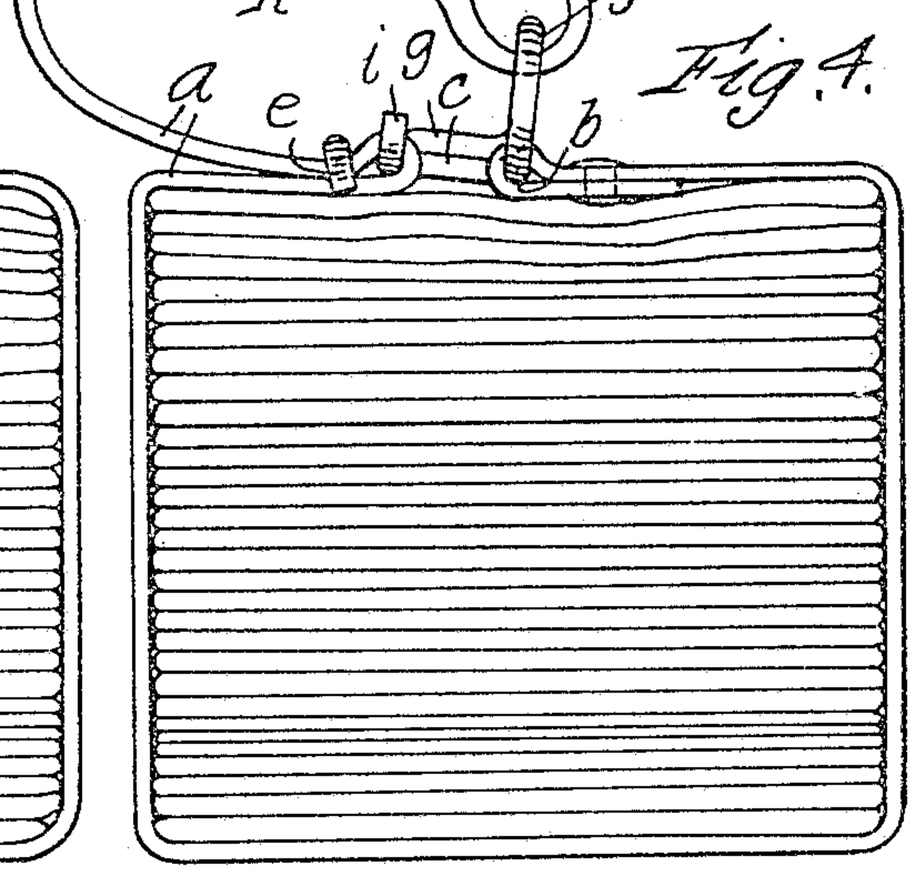

Fig. 4.

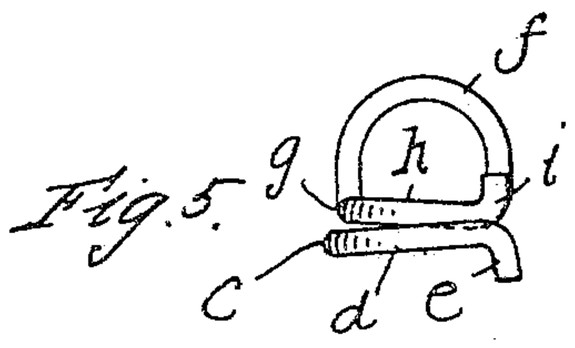

Fig. 5.

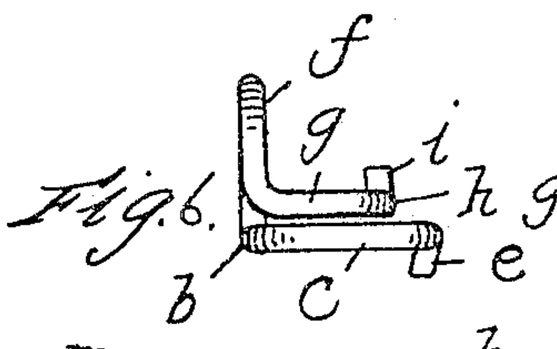

Fig. 6.

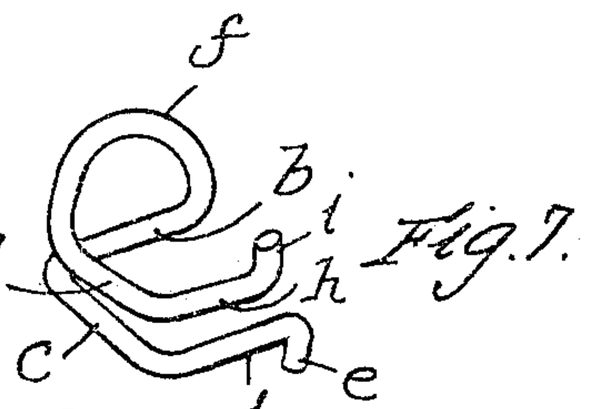

Fig. 7.

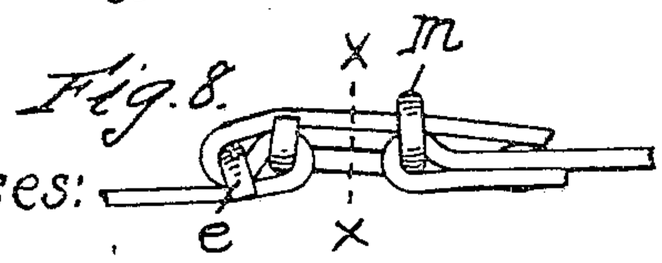

Fig. 8.

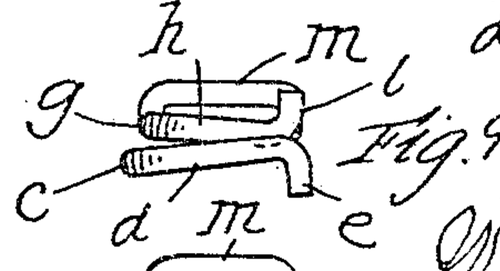

Fig. 9.

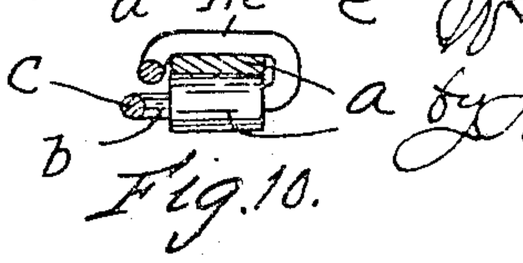

Fig. 10.

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No. 787,335. Patented April 11, 1905.

UNITED STATES PATENT OFFICE.

WILLIAM D. LAMBERT, OF HAVERHILL, MASSACHUSETTS.

STRAP-FASTENER.

SPECIFICATION forming part of Letters Patent No. 787,335, dated April 11, 1905.

Application filed May 5, 1904. Serial No. 206,425.

To all whom it may concern:

Be it known that I, WILLIAM D. LAMBERT, of Haverhill, county of Essex, State of Massachusetts, have invented an Improvement in Strap-Fasteners, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to certain improvements in strap-fasteners, which, while especially adapted for use by letter-carriers in strapping together bundles of mail-matter, are also adapted for the general purposes of an ordinary buckle.

The objects of my invention are to provide a particular form of buckle which is not only adapted to hold a thick, firm, or rough strap securely at any point, but which is also adapted to hold a worn, soft, thin, slippery, or oily strap as well; which enables a bundle to be fastened and unfastened with the greatest facility; which is adapted to be adjusted or bent readily, so that it may be always made to engage firmly the strap to which it is connected whatever the condition of the strap may be; which permits the strap to be introduced into the buckle transversely at any point, so that the necessity of passing the end of the strap through the buckle is avoided, thereby permitting a snap-hook to be employed at the end of the strap, so that the bundle which is held by the strap may be readily and securely attached to the rings of a carrier's bag; which permits the ready substitution of one buckle for another in case of breakage without unfastening the usual loop formed at the buckle end of the strap, and which is simple and comparatively inexpensive to manufacture. I accomplish these objects by the means shown in the accompanying drawings, in which—

Figure 1 is a plan view of a strap and buckle made according to my invention. Fig. 2 is a side elevation thereof. Figs. 3 and 4 are side elevations showing two positions of my device when applied to a bundle of letters; and Figs. 5, 6, and 7 are respectively front, side, and perspective views of the buckle disconnected from the strap. Figs. 8 and 9 are side and front views, respectively, of a slightly-modified form of the buckle. Fig. 10 is a cross-section on line x x of Fig. 8.

As shown in the drawings, the strap a is provided with a buckle which consists of a single continuous piece of stiff spring-wire bent to form the various parts now to be described. A supporting-bar b is arranged in the usual loop formed in one end of the strap, said bar extending transversely of the strap. An arm c extends longitudinally from one end of the bar b at approximately right angles thereto, and a strap-engaging bar d extends transversely from the end of the arm c in front of bar b, the free end of said bar d being bent downwardly to provide a strap-retaining finger e, and the bars b and d and the arm c are located, preferably, approximately in the same plane. A looped-shaped portion f is arranged above bar d and in a plane approximately perpendicular to the plane of bars b and d, said loop extending from the opposite end of the bar b from the arm c to a point a short distance above but closely adjacent its other end. The loop f may be semicircular or rectangular in form, as shown in Figs. 5 and 9, respectively, according to the special purpose for which the buckle is to be used. An arm g extends from the free end of the looped portion f at a short distance above and approximately parallel to the arm c, and a strap-holding bar h extends from the end of the arm g approximately at right angles thereto and approximately parallel to the bar d, although it is preferably made to converge slightly with bar b, so that all the bars will be parallel when the parts are under tension. The arm g is somewhat shorter than arm c, so that bar h is held between bars b and d and above the plane thereof, the space between bars d and h being sufficient to permit the ready introduction of the strap edgewise therebetween. The bar h is provided with a strap-retaining finger i at its free end. The opposite end of the strap from the buckle is provided with a loop, in which a snap-hook k of common form is secured.

The manner of securing a bundle of letters or other matter by means of my device is as follows: The bundle is held in the hand and

the strap passed about it, the thumb being pressed upon the loop *f*, so that the arms *c* and *g* are thrown into a vertical position with relation to the surface of the bundle, as shown in Fig. 3. A loop is then formed in the strap, which is passed over the end of the bar *h*, one side portion of the loop passing between the bars *d* and *h*, so that both side portions pass beneath the bar *d*. The loop *f* is then released, so that the arm *c* may rest on the bundle, and the end of the strap is pulled, so that it slides over and about the arm *h* until all the slack is taken up. Before the strap is pulled tight the arm *g* is held out of contact with arm *c*, and bar *h* is held above the plane of bars *b* and *d*, as shown in Figs. 2 and 3; but as the strap is pulled tight about bar *h* its arm *g* will be drawn down against the lower arm *c*, the interposed loop *f* then yielding and acting as a stiff spring. The bar *b* being held in the loop of the strap acts as a pivot, so that when arm *g* is pulled down it will cause arm *c* and bar *d* to be swung downward by a force equal to the tension of the interposed spring until the arm *g* is forced against arm *c*, and then the bar *h* will almost have a direct pull down on the bar *d* through the action of the strap thereon. The resulting action of the strap on bar *h* causes the bar *d* to be pressed firmly against the strap as it passes beneath it, said bar *d* in turn pressing the double fold of the strap beneath it against the surface of the package, so that the friction of the strap against the package, against itself, and against the two bars *d* and *h* prevents it from slipping at all about the bar *h* and becoming loosened on the package. As the strap-engaging bar *d* is connected to the supporting-bar *b*, to which the end of the strap is fastened and which practically constitutes the body of the buckle by a practically rigid connection, and as the strap-loop-holding bar *h* is connected to bar *b* by the loop *f*, the end thereof which is connected to arm *g* is adapted to yield both horizontally and vertically of the buckle, and as there is no special tendency to draw bar *d* away from bar *b* when the strap is tightened and practically the whole pull on the strap is applied to bar *h* it follows that there is a strong tendency as the strap is tightened to draw the bar *h* toward bar *d*, which is permitted by the yielding of the loop *f*. It follows, therefore, that as the strap is tightened it will draw the bar *h* toward the bar *d* to an extent directly proportional to the strain upon the strap, and as the closer the bars *h* and *d* are together the more tightly will the strap be held by the buckle it follows that the force with which the buckle grips the strap will vary directly with the strain thereon. The pull on the strap also springs the free end of bar *h* down toward the package to some extent, so that the strap lies against the bundle from a point directly beneath said bar to a point beneath the bar *b*.

From the foregoing it will be seen that the greater the tension which can be placed on the springs of the buckle and the greater the tension which can be placed on the package by the strap, if the package is even slightly elastic, the greater will be the combined tendencies to prevent the strap from slipping. Thus it will be seen that the very forces which tend to loosen the strap tend to tighten the hold of the buckle upon it—that is, they tend to increase the force with which the bar *d* is pressed against the strap and which in turn presses the inner face of the strap against the package and its two outer faces together. In this connection it will be noted that when the strap does slip about bar *h* these surfaces move in opposite directions on each other.

In case it is found that the bars *d* and *h* are so far apart that insufficient friction is placed upon the strap to hold it it is simply necessary to press the bars *d* and *h* together with pliers or other convenient means. This transverse adjustment of the bars *d h* without bending the buckle out of shape or disturbing the approximate parallelism of said bars is made possible by the location of the loop *f*, which constitutes a portion of the connection between the loop-holding bar *h* and the supporting-bar *b* in a plane or position at an angle to the planes of said bars and their connecting-arms, thereby permitting the wire at the ends of the loop to be twisted slightly as the loop is drawn into a slightly-oblique position to permit the bar *h* to be moved transversely toward bar *d*. The same action takes place when the strap is tightened as before described; but in the latter instance the movement of the bar *h* toward the bar *d* is usually not sufficient to "set" the wire in a different position. To disengage the bars from the strap, it is simply necessary to press back the loop *f* so as to lift the arm *d* out of holding engagement with the inner side of the strap, so that when the loop is moved back so that the parts are in the position of Fig. 3 the strap may be readily slipped out of engagement with the bars *d* and *h*. It will be noted in this connection that the strap-retaining fingers *e* and *i* not only extend in opposite directions, but also in directions approximately parallel to the plane of the loop *f*, so that when said loop is pressed against the package, as in Fig. 3, said fingers are then in a position in which they will not materially interfere with the ready removal of the strap-loop from the strap-receiving passage between the holding and engaging bars—that is, the finger *e* will then lie nearly parallel to the strap as it is drawn from bar *h* to the bundle and the finger *i* will then lie in the direction of the strap-loop.

In case it is desired to make a handle of the end of the strap or to attach the package to a ring or any other support it is simply necessary to catch the snap-hook *k* into the loop *f*,

as shown in Fig. 4, the hook first being passed through the supporting-ring if it is desired to attach the bundle to the ring.

In case the wire should become broken for any reason the two arms *c* and *g* may be sprung apart and the defective buckle removed by withdrawing the bar *a*, arm *c*, and bar *d* from the loop in the strap. In a similar manner a new buckle may be substituted.

The strap-retaining end portions or fingers *e* and *g* are preferably located as shown, the finger *e* being long enough to extend over the thickness of the strap when doubled and the finger *f* being located so as to engage some part of the semicircular portion of the loop in the strap as it passes about bar *b*.

In Figs. 8, 9, and 10 I show a modified form of buckle, which is especially adapted to be used without the snap-hook. In this instance the loop is made rectangular and provides a space between it and the bar *b* to permit the end of the strap to be passed therethrough, as shown in Figs. 8 and 10. With this arrangement the strap is not only held with additional security by the buckle, but the strap end prevents the loop from being tipped back so as to loosen the hold of the buckle on the strap, thereby making the buckle particularly desirable for use as a trunk-strap and for similar purposes.

While I have shown the parts of the buckle in a form which I consider most desirable, I have found that the parts may be somewhat differently associated without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a strap-buckle the combination with a strap-supporting bar, of a free-ended, strap-loop-holding bar, and a free-ended strap-engaging bar, adjacently disposed in parallelism, and yieldingly connected at their corresponding ends to said supporting-bar, thereby providing at their free ends an open strap-receiving passage, substantially as described.

2. In a strap-buckle the combination with a strap-supporting bar, of a free-ended, strap-loop-holding bar, and a free-ended strap-engaging bar, adjacently disposed in parallelism, the former above the latter, and yieldingly connected at their corresponding ends to said supporting-bar, thereby providing at their free ends an open, strap-receiving passage, substantially as described.

3. In a strap-buckle the combination with a strap-supporting bar, of a free-ended, strap-loop-holding bar, and a free-ended strap-engaging bar, adjacently disposed in parallelism, connected at corresponding ends to said supporting-bar and relatively yielding transversely of the buckle, thereby providing at their free ends an open, strap-receiving passage, substantially as described.

4. A strap-buckle comprising a strap-supporting bar, a strap-loop-holding bar, and a strap-engaging bar, said engaging bar being connected at one end to one end of said supporting-bar, and a spring-wire loop connected at one end to the opposite end of said supporting-bar, and arranged in a plane at an angle to the plane of said bars, said holding-bar being connected at one end to the opposite end of said loop, substantially as described.

5. A strap-buckle comprising a strap-supporting bar, a strap-loop-holding bar, and a strap-engaging bar, said engaging bar being connected at one end to one end of said supporting-bar, a spring-wire loop connected at one end to the opposite end of said supporting-bar, and arranged in a plane at an angle to the plane of said bars, said holding-bar being connected at one end to the opposite end of said loop, the opposite ends of said holding and engaging bars being free and providing at their free ends an open, strap-receiving passage, substantially as described.

6. A strap-buckle comprising a strap-supporting bar, a strap-loop-holding bar, and a strap-engaging bar, said engaging bar being connected at one end to one end of said supporting-bar, a spring-wire loop connected at one end to the opposite end of said supporting-bar, and arranged in a plane at an angle to the plane of said bars, said holding-bar being connected at one end to the opposite end of said loop, the opposite ends of said holding and engaging bars being free and providing at their free ends an open strap-receiving passage, and strap-retaining fingers at the free ends of said holding and engaging bars extending in opposite directions approximately parallel to the plane of said loop, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM D. LAMBERT.

Witnesses:
LOUIS H. HARRIMAN,
H. B. DAVIS.